

Tears of the Alpaca

By Ingrid Wood

"Dogs have breed standards, cats have breed standards, sheep have breed standards, and heck...", the speaker paused dramatically for added effect, "...even rats have breed standards." Laughter! Many of those sitting in the audience nodded in agreement. "It's time for the growing alpaca industry to formulate and adopt such a breed standard," those nods said.

Is it really?

Let's examine the issues. What exactly is a standard? Various livestock-and pet parent organizations indeed have detailed show standards for judges to follow. Breeders use them as blueprints to guide them in their breeding decisions. A standard defines type and conformational soundness for a species or breed. For example, the AKC breed standard for Borzoi calls for a hare-shaped foot with well padded toes. All other things being equal, a "hare foot" is believed to produce superior speed over a "cat foot". With dogs originally bred to hunt game in their native Russia, such foot conformation makes practical sense. The rather narrow chest and well bent stifles the Borzoi breed standard calls for are also designed to produce streamlined bodies that move like the wind.

Sounds completely sensible, doesn't it? Why shouldn't alpaca breeders find a well-formulated standard desirable?

For one thing, not all concerns shared by breeders of other species apply to the alpaca. Dog breeders, for example, would be hard pressed to preserve breed types without standards, defining, for example, what distinguishes an Afghan from a Saluki. Left totally to their own devices and allowed to breed at random, the many diverse canine phenotypes would eventually mesh into a genetic Heinz variety.

Indiscriminate outcrossing between breeds of sheep would also lead to the loss of a wide variety of unique and phenotypically different populations. To preserve the many breeds of cattle, breeders must have a clear understanding of how their chosen breed type differs from others in regard to size, head shape, horns, and other conformational traits. There exist over 500 (!) different breeds of goats.

In contrast, alpacas only come in two varieties - Huacaya and Suri. The crucial difference between them can be described in two to three sentences. Its preservation certainly does not necessitate formulation of a breed standard.

In many species, breeders have the opportunity to outcross to other breeds with the objective of picking up desirable genetic traits. This can be done openly - often creating new breeds- or on the sly. The persistent rumors about a Borzoi breeder who introduced Great Pyrenees "blood" in Borzoi lines may very well be just that...a rumor. Those

modern day racing Whippets that resemble Staffordshire Bull Terriers may quite possibly be a "throw back" to distant ancestors rather than genetic imposters...in your dreams. Fact is that when the AKC started random DNA testing, roughly 20% of all tested litters turned out to have a different sire than the one listed on their pedigrees. Breed type can be lost rapidly with the introduction of genes coding for "non-typey" phenotypes.

Such a loss need not concern North American alpaca breeders who do not have the opportunity to outcross if they wish to register their offspring. There is no need for an alpaca breed standard to guard future alpaca "purity." Mandatory DNA testing for all registered offspring already takes care of that. (The fact that many alpacas are, due to circumstances created by the Spanish invasion of South America, not genetically "pure" to begin with is a different argument altogether. In the context of this article, breed purity refers to any North American alpaca whose ancestors were registered as "alpacas" by the ARI.)

If alpaca breeders think they have problems with a virtual smorgasbord of genetic defects now, one must wonder how they'll cope once the Pandora's box of a breed standard has been opened.

Genetic diversity declines dramatically when a breed standard is adopted, and a very narrow interpretation of what is "correct" is amply rewarded in the showring. While a few individuals will enjoy huge financial gains with such a program, the majority of breeders will pay dearly. Small breeders especially will suffer from dramatic increases in veterinary expenses and loss of stock due to lethal defects and illness.

Let's hope no alpaca breeder is naïve enough to think we can create an entire alpaca population that conforms to a standard without heavy line- and inbreeding.

Breeders eager to adopt such a program may want to read *Tears of the Cheetah* (2003). The author, Dr. Stephen J. O'Brien, heads the Laboratories of Genomic Diversity at the National Cancer Institutes.

In many species, wild animals display inbreeding avoidance behavior. They will only voluntarily breed with a parent, sibling, or cousin if left with no choice. Cheetahs fit that category. After experiencing a genetic bottleneck, all survivors are virtual genetic clones. All cheetahs have compromised immune systems and severe reproductive problems. All cheetah males have poor sperm quality. How do they survive at all? Dr. O'Brien credits their solitary lifestyle with the cheetah's ability to survive as a species. This lifestyle enables the individual cat to deal with encounters with other animals despite a severely compromised immune system.

Let the enthusiastic proponents of a breed standard be reminded that alpacas are herd animals.

Another example is described in a chapter discussing the genetic poverty of the severely inbred Florida panther population. O'Brien tells us that all have "tail crooks". Tested males had 94% developmentally malformed sperm. 90% of all male kittens captured in the 1990's were cryptorchids - one testicle had failed to descend into the scrotum.

In contrast, Dr. O'Brien tells the success story of another population. In the mid nineties, 85% of all African Serengeti lions suffered from a virus resembling that responsible for canine distemper. Many died. Many others, however, survived and recovered without human intervention. Dr. O'Brien writes: "Genetic differences among the outbred (emphasis mine) lions are most likely responsible for their survival. The lions demonstrate the insurance value of varied immune response within a genetically diverse population."

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Who among present day alpaca breeders has a crystal ball to predict which traits and genetic material will be important for future generations of North American alpacas?

Interestingly, the human species presents a perfect example of how specific genetic mechanisms take on importance in a changing environment.

Dr. O'Brien and his staff labored more than a decade to discover why some people, although repeatedly exposed to the HIV virus, do not become infected. This is what they found: A small segment of the Caucasian population carries a fortunate genetic mutation. Their CCR5 gene does not code for chemokine receptors on the cell's surface. This makes it impossible for the HIV virus to enter a cell and infect the human who has a double dose of this gene (one from the father and one from the mother). Carriers who only have one dose of the mutated gene become infected, but development of full-blown AIDS is often delayed. This mutation, obviously developed after the migration of Homo sapiens from the African continent, is completely absent in native Africans. African Americans who carry the gene inherited it from Caucasian ancestors. There is some speculation that the same mutation also aided the lucky carriers in surviving the Bubonic Plague (Black Death), responsible for killing an estimated 30-40 million Europeans during one five year span in the 14th century.

Dr. O'Brien points out that medical research is presently focused on using knowledge gained from the study of the mutated gene to prevent the spread of the HIV virus. Geneticists determined that only roughly 1% of North American Caucasians have two doses of the gene (the estimates are higher for Europeans).

Fifty years ago, this miniscule segment of United States citizens was of no particular importance to anyone - medically speaking. Now their special genes may very well hold the key to saving lives all over the world.

Can and should we draw parallels to the alpaca? Is genetic diversity, unhampered by a restrictive breed standard, important to the survival of the alpaca? Readers may draw their own conclusions.

What about shows?

"How can you have alpaca shows without a breed standard?" a dog breeder friend queried not long ago. "Without a standard, what criteria do you use to select your breeding stock?" another one wanted to know.

Breed standards should be formulated to preserve the functional traits of a species or breed. Do they accomplish this? The next time an industry "leader" uses that argument to justify his/her call for a breed standard, pause before you nod your head in agreement. Pursue the vast material covering various species' physical problems and miseries caused by breeders and show judges with hidden or misguided agendas.

Alpaca show judging criteria call for decisions made based on 50% fiber and 50% conformation. As llama breeders have amply proven in recent years, superior camelid fiber can be grown on any phenotype. A conformational standard is therefore not directly an issue in regard to the practical purpose the alpaca is bred for. Of course, sound conformation is important as it pertains to the overall health of the animal.

Dog show judges differentiate between type and soundness, with debates raging over whether you can have one without the other. Alpaca show judges certainly select for type - meaning those traits that differentiate an alpaca from a llama - mostly size, ear shape, and topline.

They also pay attention to soundness such as correct bite, penalizing malocclusion. Furthermore, functional conformation calls for straight legs (not to be confused with a straight front, a term used to describe poor angulation - very much a non-functional trait). Kinky tails are often the tell-tale mark of a spinal deformity, so a good judge would certainly not dismiss such a defect as purely cosmetic.

Since the alpaca is a natural pacer (an extremely efficient mode of locomotion!), width of chest should be moderate. The vicuna, ancestor of the present day alpaca, models a headshape that is conformationally correct and sensible for a prey animal (and, no, it's not the short head called for by those who are either ignorant of species specific functional traits or simply don't care). A slab sided alpaca will not have a sufficiently large enough stomach to thrive on its natural diet - forage found on pasture. As breeders of certain "show quality" sheep found out, such animals must be supplemented with large amounts of costly grain to meet their dietary needs.

As we examine each of its body parts for its intended purpose, it's evident that the alpaca already has a standard. I call it the Gold Standard of Functional Traits. Within the confines of this Gold Standard, there is plenty of room for individual preferences for a

certain "type" without compromising soundness - the very breeding philosophy that promotes healthy diversity.

A standard based on strictly functional criteria need not necessarily be a bad thing. What is bad is how standards are often used (or should I say abused?), misinterpreted, and distorted. Human nature being what it is, breed standards encourage breeding for traits exaggerated beyond what is healthy for the animals. There are also unfortunately plenty of examples in other species where industry "leaders" crafted standards to serve their own purpose (read marketing). Judges who desire regular assignments then feel pressured to put up animals with traits leading to loss of function. In some cases, standards called for traits that are genetically impossible to achieve (for example black noses in liver colored dogs). The "Oops, we made a mistake" cry and hue raised years later often cannot repair the damage caused by self-serving and/or ignorant self-styled experts who disdainfully brush aside advice from trained geneticists.

Most, if not all, camlid breeders are familiar with the role the conquering Spaniards played in the history of the alpaca. In light of that history, I quote excerpts from Tears of the Cheetah:

"When a threatened species is fortunate enough to dodge an extinction crisis, their future is doubly precarious. Even if the census rises back to hundreds of thousands, as it did for cheetahs and northern elephant seals, the recovery may depend on close inbreeding, shedding gene diversity, with devastating consequences. One glaring outcome is an unpredictable array of congenital impairments that can cause fetal/infant abnormalities as well as defects in reproduction."

And later: "A species that loses its immune diversity carries a genetic axe suspended over its head, awaiting the next emerging fatal virus, bacteria, or parasite to appear."

In- or line breeding have a place in a serious breeding program. Such occasional breedings, carefully chosen by individuals to "sort out" genetic traits in their herd or set the desired type, do not diminish genetic diversity in the greater alpaca population.

A cookie cutter selection for one type of alpaca, prompted by a rigid standard and followed by desperate attempts to conform to what's being hyped as representing the epitome of such a standard, does reduce a wide variety of allelic combinations to a restricted few. The purpose of a standard is to promote conformational uniformity. The by-product is, without a doubt, loss of genetic diversity with all its unpleasant ramifications.

I hope advocates for an alpaca breed standard and artificial insemination come to their senses before the tears of the alpaca start to flow. The tears of their human caretakers will flow as well.

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